

Weekly Report

2018.1210-2018.1216

1.This Week

Deep Learning Power Grid Project:

1.We find that on average, the fault center only affects a few hundred nodes in a 2,000 node power grid.

2.Think about the possibility and development about the AI for VIS idea. I find the following difficulties:

- For a 2,000 node grid that contains 2,000 time steps, we'll have each data sample as a at least 2,000*2,000 picture. This is actually a challenging size in picture tasks in machine learning area. One possible way is sampling to get a usable size of picture.
- How should we arrange the order of nodes in the pictures. First, the order in all pictures should remain the same. Second, there exist many different orders and they may affect the result of the machine learning algorithm.
- Wether we should take the rotation of pictures into considerations.

3.Look for materials so solve the aforementioned confusion.

Power flow Project

1.Make a video of our system. Send this video to Huang and collect feedbacks. He suggests:

- Color of the topological views needs to be revised.
- Consider to find math theory in power flow computing.
- Consider to show dynamic power flow changes in a whole year(100,000 power flows).

2.Organize the technical report.

Southern Power Grid Project

1.Read materials that Hongkai gave us.

2.Talk to Fei Zhijun and Lu Jinxuan about the following arrangements.

Working Hour: (except nap and eat time)

8-9 hours / week day

4 hours / weekend day

Total working hour:

Other

1.Learn about basic reinforcement learning ideas.

2.Change the template of the wavelines paper and prepare to submit it to HMS.

Paper Reading

1.Canonical Correlation Analysis for Multilabel Classification: A Least-Squares Formulation, Extensions, and Analysis

This paper formulates Canonical Correlation Analysis (CCA) as a least-squares problem to solve multilabel case under a mild condition that holds for high-dimensional data. In this way, algorithms that solve least-squares problems can be applied. Sparse CCA and regularization on CCA are also proposed.

2.Fault location and detection techniques in power distribution systems with distributed generation: A review

This paper reviews the existing fault location methods. These methods can be divided into two categories, conventional and artificial intelligence techniques. Conventional techniques: travelling wave method and impedance based method. Artificial intelligence techniques: include Artificial Neural Network (ANN), Support Vector Machine (SVM), Fuzzy Logic, Genetic Algorithm (GA) and matching approach. Advantages and disadvantages of all these methods are discussed.

3.A Fault location principal PPT.

It talks about different type of power grid faults. Most importantly, why these faults might happen and how will the nodes and links behave.

2.Progress

Work	Deadline	Progress
Power grid paper with Deeping learning	-	1.Have interesting findings for the dataset.
SQC Paper	-	1.Delayed
Power Flow Project	December	1.Finish the system demo of the project. 2.The technical report are nearly finished(except the section that introduces the system prototype).